

U.S. Patent Application Serial No. **09/926,576**
Amendment dated March 24, 2004
Reply to OA of **October 3, 2003**

REMARKS

Claims 1 and 11-20 are pending in this application. Claim 11 has been amended herein.

Claims 11-20 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,616,657 (Imamura et al.) (Office action paragraph no. 4)

Reconsideration of the rejection of claims 11-20 over Imamura et al. is respectfully requested in view of the following remarks.

Applicants have amended claim 11 to clarify that the lactic acid polyester (III) is not a separate component from the agent imparting impact resistance (IV), but that the agent imparting impact resistance (IV) is composed of the lactic acid polyester (III). Support for this amendment may be found on page 10, line 31, of the specification.

In traversing the rejection, Applicants note the following differences between U.S. patent 5,616,657 (Imamura et al.) and the present invention:

A polyester composition according to the present invention contains **a polylactic acid (V) and an agent imparting impact resistance (IV), wherein an agent imparting impact resistance (IV) is composed of a lactic acid polyester (III) which has a lactic acid unit (I) and a polyester component (II).**

The polylactic acid (V) and the lactic acid polyester (III) contained in the polyester composition are **separate components**. It is evident in the present specification that the polylactic acid (V) and the lactic acid polyester (III) differ from each other from the description in the present

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application of “polyester composition (VI), comprising the agent imparting impact resistance (IV) and polyhydroxy carboxylic acid (V)” on page 22, lines 15-16, and from descriptions about polyester composition composed of polylactic acid (V) and agent imparting impact resistance (IV) in Table 11 on page 47.

Since the polyester composition according to the present invention **contains separate components** of polylactic acid (V) and an agent imparting impact resistance (IV) composed of a lactic acid polyester (III) which has a weight average molecular weight of 10,000 or more, a glass transition temperature of 60°C or below, **more superior impact resistance and biodegradability can be obtained while bleedout hardly occurs and superior flexibility and transparency are maintained** (see page 21, line 17, to page 22, line 3, of the present application). Furthermore, the polyester composition is useful as various types of molded products, molding resin, material for sheets and films, resin for paints, resin for ink, resin for toner, adhesive resin, medical materials, lamination on paper, and foam resin materials, and particularly as wrapping material and adhesive (see lines 14-18 on page 22 of the present application).

On the other hand, U.S. Patent 5,616,657 (Imamura et al.) discloses that a high molecular weight lactic copolymer polyester (hereinafter, referred to a lactic polyester) exhibits flexibility and transparency (column 3, line 42), and biodegradability (column 20, line 43). However, Imamura et al. neither discloses nor suggests that a polyester composition as disclosed in the present invention, which is obtained by mixing polylactic acid in addition to the lactic acid polyester, has a more

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superior impact resistance and biodegradability in addition to no bleedout, and superior flexibility and composition is obtained by mixing a polylactic acid with an agent imparting impact resistance composed of a lactic acid polyester, and therefore, the invention of Imamura et al. completely differs from the present invention.

Claims 11-20 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,844,066 (Kakizawa et al.). (Office action paragraph no. 5)

Reconsideration of the rejection of claims 11-20 over Kakizawa et al. is respectfully requested in view of the following remarks.

Kakizawa et al. discloses that a lactic acid-based polyester containing polylactic acid and polyester which has a dicarboxylic acid unit and a diol unit (column 5, line 4, to column 6, line 20), has moldability, storage stability, and biodegradability. Furthermore, Kakizawa et al. discloses that the lactic acid-based polyester may be manufactured by further adding a component other than lactic acid content and the polyester, for example, a polymer of β -hydroxypropanoic acid (namely, polylactic acid) (column 12, line 54, to column 13, line 8). **The process according to Kakizawa et al. is a process for preparing a lactic acid-based polyester by further copolymerizing polylactic acid. As long as the content of a polyester unit (II) in the lactic acid-based polyester obtained by copolymerization is much larger than the content of the polyester unit (II) in the polyester composition according to the present invention, the lactic acid-based polyester of Kakizawa et al. has the same properties of the polyester composition according to the present**

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invention.

As described above, the lactic acid-based polyester according to Kakizawa et al. clearly differs from the polyester composition according to the present invention, which is composed of two components of a polylactic acid and an agent imparting impact resistance composed of lactic acid polyester. Therefore, claims 11-20 are not anticipated by Kakizawa et al.

Claims 11-20 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,525,671 Ebato et al. (Office action paragraph no. 6)

Reconsideration of the rejection of claims 11-20 over Ebato is respectfully requested.

Ebato et al. discloses that a linear lactide copolymer (hereinafter, referred to a lactic acid-based polyester) is obtained by ring opening copolymerization of a lactide and a hydroxyl-containing polymer (column 6, lines 56 to 57).

However, Ebato et al. neither discloses nor suggests that a polyester composition as recited in the present invention, which is obtained by mixing a polylactic acid with the lactic acid-based polyester, has a more superior impact resistance and biodegradability in addition to no bleedout, and superior flexibility and transparency maintained. Therefore, the linear lactide copolymer of Ebato et al. clearly differs from the polyester composition according to the present invention.

As described above, the reference discloses only a lactic acid-based polyester, but does not disclose a polyester composition essentially composed of two components of a polylactic acid and an agent imparting impact resistance composed of lactic acid polyester. Therefore, the present

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invention is not anticipated by Ebato et al.

Claims 11-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over each of U.S. Patent No. 5,616,657 Imamura et al., U.S. Patent No 5,844,066 Kakizawa et al., and U.S. Patent No. 5,616,657 Ebato et al. in view of U.S. Patent No. 6,114,495 Kolstad et al. (Office action paragraph no. 7)

Reconsideration of the rejection is respectfully requested.

As described above, the present invention provides a polyester composition essentially containing two components of a polylactic acid and an agent imparting impact resistance composed of a lactic acid polyester. Since the lactic acid polyester and the polylactic acid are used to make a composition, superior flexibility and transparency, which cannot be obtained from copolymers disclosed in the above citations, are maintained, and more superior impact resistance and biodegradability are imparted. However, the references of Imamura et al., Kakizawa et al. and Ebato et al. neither disclose nor suggest that a polyester composition is prepared by mixing a polylactic acid with an agent imparting impact resistance composed of a lactic acid-based polyester.

Since the polyester compositions according to the present invention contains a polylactic acid and an agent imparting impact resistance composed of a lactic acid polyester which has a weight average molecular weight of 10,000 or more and a glass transition temperature of 60°C or below, more superior impact resistance and biodegradability can be obtained while bleedout is hardly generated and superior flexibility and transparency are maintained (see page 21, line 17, to page 22,

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line 13, of the present application). Furthermore, the polyester composition is useful as various types of molded products, molding resin, material for sheets and films, resin for paints, resin for ink, resin for toner, adhesive resin, medical materials, lamination on paper, and foam resin materials, and particularly as wrapping material and adhesive.

Applicants therefore submit that even if the above citations are combined, the polyester composition according to the present invention cannot be obtained, and therefore, the present invention would not have been obvious over any combination of the references.

In particular, Kolstad et al. neither discloses nor suggests that a polyester composition is prepared by mixing a polylactic acid with an agent imparting impact resistance composed of a lactic acid-based polyester. Since the polyester composition according to the present invention is prepared by mixing two essential components as described above, a more superior impact resistance and biodegradability can be obtained while bleedout is hardly generated and superior flexibility and transparency are maintained (see page 21, line 17, to page 22, line 13, of the present application). Therefore, Kolstad et al. completely differs from the present invention.

Even if the Imamura et al., Kakizawa et al., Ebato et al. and Kolstad et al. references are combined, the polyester composition according to the present invention cannot be obtained, and therefore, the present invention would not have been obvious to one having ordinary skill in the art at the time the invention was made.

Regarding attached Declaration under 37 CFR 1.132

In addition to the above arguments regarding the lack of a *prima facie* case of obviousness

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in the combination of Imamura et al., Kakizawa et al., Ebato et al. and Kolstad et al., Applicants here address the Examiner's assertions that lactic acid polyester (III) of the present invention is the same as a "lactic acid-based polyester" disclosed in the citations of Imamura et al., Kakizawa et al., Ebato et al. and Kolstad et al., and that the polyester composition according to the present invention, which essentially contains a polylactic acid (V) and an agent imparting impact resistance (IV) which is composed of a lactic acid polyester (III), is the same as the "lactic acid-based polyester". Applicants contend that these assertions are not correct.

In order to clearly show the difference between lactic acid polyester (III) and the polyester composition according to the present invention, and the "lactic acid-based polyester", experiments were carried out by Shoji Imamura and are presented in the attached Declaration under 37 CFR 1.132. The experiments clearly show that it is difficult to form a film by **using a lactic acid-based polyester alone**, and therefore a molded article composed of the lactic acid-based polyester alone is difficult to obtain.

The experiments show that even if a lactic acid-based polyester used in the citations, which can form a film, is selected and is used alone, when the amount of polyester unit (II) in the lactic acid-based polyester is equal to the amount of polyester unit in the polyester composition according to the present invention, the polyester unit in the polyester composition according to the present invention has superior properties to the lactic acid-based polyester. That is, even if the content of polyester (II) which yields superior properties to the polyester composition is determined to be less than the amount of polyester units in the lactic acid-based polyester, the polyester composition of

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the present invention exhibits excellent properties, which are equal to or superior to the properties exhibited by a lactic acid-based polyester alone. That is, the present invention clearly demonstrates superior results which are not suggested by the cited references.

Applicants therefore submit that claims 11-20 are novel and non-obvious over Imamura et al., Kakizawa et al. and Ebato et al., and Kostad et al., taken separately or in combination.

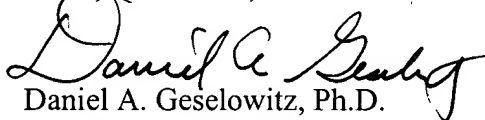
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If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosures: Declaration under 37 CFR 1.132

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